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HOW TO TRAIN FOR BICYCLING

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AMERICA'S NATIONAL GAME

By A. G. SPALDING

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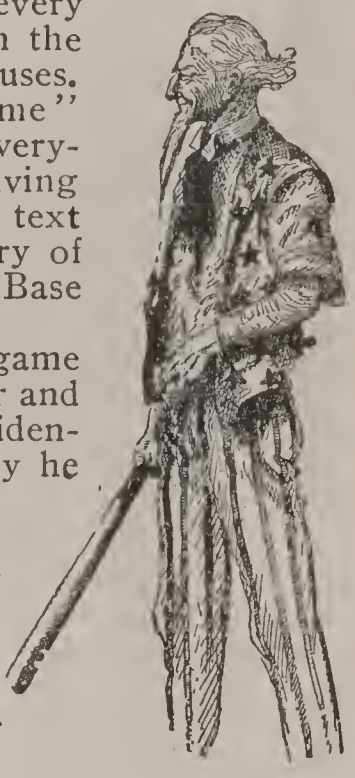

The above work should have a place in every public library in this country, as also in the libraries of public schools and private houses.

The author of "America's National Game" is conceded, always, everywhere, and by everybody, to have the best equipment of any living writer to treat the subject that forms the text of this remarkable volume, viz., the story of the origin, development and evolution of Base Ball, the National Game of our country.

Almost from the very inception of the game until the present time—as player, manager and magnate—Mr. Spalding has been closely identified with its interests. Not infrequently he has been called upon in times of emergency to prevent threatened disaster. But for him the National Game would have been syndicated and controlled by elements whose interests were purely selfish and personal.

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The response on the part of the press and the public to Mr. Spalding's efforts to perpetuate the early history of the National Game has been very encouraging and he is in receipt of hundreds of letters and notices, a few of which are here given.

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A. J. Reach, Philadelphia, old time professional expert:—"It certainly is an interesting revelation of the national game from the time, years before it was so dignified, up to the present. Those who have played the game, or taken an interest in it in the past, those at present engaged in it, together with all who are to engage in it, have a rare treat in store."

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Pittsburg Press:—"Historical incidents abound and the book is an excellent authority on the famous sport."

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New York World:—"Albert G. Spalding, who really grew up with the sport, has written 'America's National Game,' which he describes as not a history, but the simple story of the game as he has come to know it. His book, therefore, is full of living interest. It is a volume generously illustrated and abounds in personal memories of base ball in the making."

New York Sun:—"There is a mass of interesting information regarding base ball, as might be expected, in Mr. Spalding's 'America's National Game.' It is safe to say that before Spalding there was no base ball. The book is no record of games and players, but it is historical in a broader sense, and the author is able to give his personal decisive testimony about many disputed points."

Evening Telegram, New York:—"In clear, concise, entertaining, narrative style, Albert G. Spalding has contributed in many respects the most interesting work pertaining to base ball, the national game, which has been written.

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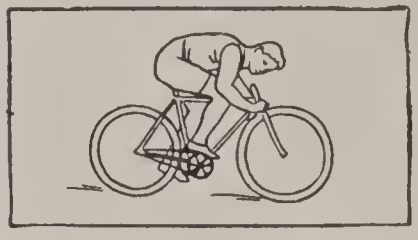

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FOR THE BEGINNER.

DISTANCE.

How fast and how far it is wise to travel the experienced wheelman will settle for himself. A word of counsel on this point may not be out of place. The absolute novice, riding for the first time, will be wise to limit to three miles or even less. Even in this short distance the exercise of a set of untrained muscles and (in a whisper be it said) the friction of an unaccustomed seat will be quite sufficient to cause considerable stiffness and soreness. The novice, in his new-born ardor, may be willing enough to ride double the distance named, but if he does so he will be decidedly uncomfortable on the morrow. If, on the other hand, he limits himself to our modest allowance he will be a little stiff perhaps, but fit and ready for a fresh attempt, which may extend a mile farther. Continuing after the same fashion, under proper guidance, he will find himself at the end of a fortnight able to ride twelve or fifteen miles without difficulty. From this point to twenty or thirty miles a day will be only a matter of practice, but the principle of gradual increase, both as a matter of comfort and of health, should be steadily adhered to. When the novice has ceased to be a novice, and has earned the right to call himself a wheelman, he will be able to undertake still greater distances. A young and vigorous rider, in proper training and on a good machine, thinks nothing of a fifty or sixty mile run, but for middle-aged and less muscular riders, Dr. Richardson's rule of six miles an hour for six hours a day is a very fair one, though recent improvements in construction have made thirty-six miles a much lighter day's work than the same distance was at the time when his limit was laid down. It is a good thing to be able to cover fifty miles at a pinch and we should hardly be disposed to consider any person a cyclist who could not do so, but if health and comfort be the first consideration, thirty-six miles will be found an ample day's work for most riders. For ladies ten or fifteen miles or less may very well suffice.

HILLS.

One of the first things to strike the novice on first taking to cycling is that the world is much more hilly than he has hitherto been accustomed to consider it. Roads, which, while he was a mere pedestrian, he had been accustomed to regard as level, he now finds to possess a very decided slope, and welcomes them on the reverse, according to the direction in which he happens to be going, with quite a keen personal interest. Such gentle gradients as these will give him little trouble, but when he comes in the early stages of his career, to a really stiff hill, whether up or down, he will not find the matter quite so simple, and he may be glad of a word of advice beforehand how to deal with it.

First, as to "up-hill."—If, as often happens, there are two hills, with more or less valley between, the descent of the last few yards of the one will enable him to get up an amount of "steam" which will materially help him in ascending the other. If the hill to be climbed be not too long or too steep, the best plan is to rush it; that is, to force his way to the top by a short but intense effort. If, on the other hand, the ascent be of any considerable length, the attempt so to deal with it would only exhaust the rider. In such case he must husband his strength, pedaling vigorously, but slowly, and making sure that every particle of every stroke tells. The successes of the best hill climbers are mainly dependent on this economy of power.

No cyclist should shirk a hill fairly within his powers, for it is by steady perseverance in the face of difficulties that powerful riders are made; but so soon as the cyclist finds that he cannot proceed without actual distress, and in particular, if he is conscious of undue strain on the heart and lungs, he should at once dismount and walk, pushing his machine before him. And in this matter each must be the judge for himself. The fact that A is able to mount a certain hill is not the smallest reason that B, perhaps much heavier, and mounted on an inferior machine, should be able to do likewise, and if he persists in making the attempt, he may have grave reason to regret it. "Fair and softly" is the best rule. Hill-climbing, like all other branches of cycling, is a matter of practice, and every hill the rider mounts, within due limits, will render him the better able to attempt another.

Meanwhile, the best rider must be content to push his machine occasionally. The necessity is unpleasant, especially with bicycle-steered machines, for the rider has constantly to lean forward in order to reach the handles, and the central axle bearings are apt to come in unpleasant contact with his knees.

Next, as to "down-hill" riding. The novice is probably of opinion that anybody can ride down hill, and so he can; but it is desirable to arrive safe and sound at the bottom, which is not quite such a matter of course. If the aspirant—as some aspirants seem to do—regards a hill from a tobogganing point of view, as a descent to be "rushed" at the speed of an express train, his cycling will soon come to an abrupt conclusion.

A cautious rider treats hills, particularly unknown hills, with all possible respect. He takes care to keep his machine well in hand until he can see to the very bottom of the descent, and even then, should the hill terminate in a road at right angles to his course, he will slacken speed in ample time before he reaches the bottom. Further, knowing his machine and the extent of his brake power, he will never allow the machine to acquire such a momentum as to make him unable to stop it within, at most, half a dozen yards. And without full confidence in his brake he will be very chary of riding down a hill of any considerable gradient at all.

Back-pedaling is often a valuable auxiliary to the brake in going down a hill; but, in many of the modern machines, keeping the feet on the pedals in descending a steep hill, has a tendency to throw the rider too far forward, and it becomes almost a necessity for the sake of balance, to travel "legs up." Hence the imperative need of a brake that shall be thoroughly trustworthy, without any extraneous assistance.

STIFFNESS OF THE LIMBS.

In the early days of his bicycling experience, it is a common thing for a beginner to find himself rather stiff and sore after riding; and even after he has passed his novitiate, and may fairly call himself a wheelman, the same complaint will now and then recur at the commencement of the season, or after an exceptionally hard day's work.

The best of remedies for such a state of things is a warm bath, and a good rub down afterwards with the following combination: 1 pint vinegar; ½ gill spirits of turpentine; 4 raw eggs (whites only), well beaten up.

The above, variously known as "white oils," "nine oils," etc., is a favorite veterinary remedy. It is practically identical with a celebrated proprietary liniment, and artful old trainers now and then sell the recipe as a special "tip," deserving of handsome recognition. Some authorities recommend the addition of half a gill of oil of thyme. Strains, bruises and stiffness disappear as if by magic under an energetic application of this remedy, which is, moreover, an excellent specific for insect bites.

FOOD.

With respect to food, the cyclist (unless in strict training) may eat pretty much what he pleases, but on the other hand, should not eat too heavily of anything, particularly if he is obliged to commence or continue his ride very shortly afterwards. Pastry is best avoided, as being indigestible, and tending to shortness of breath.

WHAT TO DRINK.

The best work in cycling, as in most other cases, is unquestionably done on non-alcoholic drinks. The great achievements of the record makers, particularly for long distances, have almost invariably been performed under total abstinence conditions. When the day's work is over, if the cyclist feels inclined to take his glass of lager beer, his pint of claret, or even his single jorum of whiskey and water, we know of no particular reason why he should not do so. But while actually riding, the less he drinks of any liquid the better, and especially of alcoholic liquids. Even the most attenuated mixtures, the modest shandy-gaff or the seductive beer, are but snares and pitfalls to the wheelman. The temporary stimulus passes away ere the second milestone is reached, and the rider finds himself jaded and feverish, probably for the remainder of the day. Alpine climbers have the same experience. The best plan is not to drink at all save

with meals. The mouth may be rinsed out when opportunity offers, but actual drinking is best avoided. If, however, the cyclist must drink between meals, his best plan will be to carry a pocket flask filled with weak tea, without milk or sugar, and put his lips to it like Mrs. Gamp, "when so disposed." For those who may find plain tea unpalatable, Dr. Richardson advocates milk tea ; that is, tea made with boiling milk and water, instead of plain water. This may be sweetened, if preferred, and if made pretty strong, will bear dilution with cold water. A raw egg beaten up in milk is a capital reviver, when obtainable. The two together are said to contain every needful element of food. Where the combination is not to be had, milk alone is by no means to be despised. Water or soda water may be added, or not, at pleasure. Personally, we approve the addition, as making the milk both more thirst-quenching and more digestible ; but this is a matter that may be safely left to the taste of the individual rider. Whatever the drink, it should be sipped slowly. A pinch of oatmea stirred up in a tumbler of water, is said to be an excellent drink, not only thirst-quenching, but sustaining.

RACING.

The racing section of the cycling sport presents both advantages and disadvantages to the rider; but there is no doubt that, on the whole, racing has done good service to the sport, and that cycling owes much of its success to the racing man. He is, in fact, largely responsible for its phenomenal development; a development which is far in advance of any parallel growth of sport in this country. Nor is the reason difficult to discover; the successful athlete uses his head; his mental as well as his physical powers are called into play. The successful cyclist, as well as the runner and the jockey, must think as well as act. It is only when sound judgment co-exists with suitable physical powers that excellence in any branch of athletics is obtained.

The first thing that a man who decides upon taking up bicycle racing should do, is to take competent medical opinion as to his capabilities for the work. And we would venture to suggest that the intending racing man should ask the opinion of some medical man, who is also a rider or an athlete in some way or other. We say this simply because some medical men set their faces against the sport without taking the trouble to consider the question at all. They arbitrarily assert the danger of cycling, and threaten the would-be cyclist with all sorts of pains and penalties if he rides. Some medical men—their number are becoming daily fewer—assert that the sport is especially productive of hernia, although long experience has shown not only that this is seldom or never caused by cycling (unless a severe fall produces it) but that persons suffering from it can yet ride and cover long distances without any trouble or suffering. It is for this reason, therefore, that it is suggested to the novice that he should go to a doctor who has some knowledge of athletics. It is well, too, for the prospective racing man to consider whether there are any drawbacks which may prevent his success. Varicose veins do not seem so seriously to interfere with the pursuit of the sport as they do with running and walking. The reason is obvious. There is an absence

of any direct *vertical* jar such as is experienced in running each time the foot comes to the ground, whilst the action is necessarily smoother, and with the aid of an elastic stocking a person suffering in this way may, in most cases, ride without injury or discomfort. In the same way as was pointed out above, hernia, if properly supported, is no bar to riding or even racing, though the latter is by no means an advisable recreation for those who have the misfortune to be thus afflicted. Myopy, or near sight, is sometimes a great bar to success on the path; the sufferer being afraid to wear glasses in case of a fall, yet being unable clearly to see his opponents, is always nervous or afraid to pass them.

If, after careful examination, a rider has ascertained that he is physically fit for the severe exertions of the racing path, and can undertake the labor without injury to wind or limb, his first step should be a little preliminary work upon a roadster. It is a very good plan for a beginner to race a few times upon his roadster, as he will be well set to the machine, and thus will be enabled to "feel his feet," so to speak, without the dangers which must always attend any one who makes his first essay on the path as a racer. When, however, he has gained a little experience, and can keep his head during the few exciting moments from the crack of the pistol to the crossing of the tape, he may purchase a racing machine; and this he should use in all his practice spins upon the path, so that he may get well set to it ere he ventures upon it in any actual contest.

HOW TO TRAIN.

Training, as applied to athletes, may be defined as the preparation of the body for new and unaccustomed strains and the gradual fitting of the human frame to undergo the severest physical exertion. The systems whereby this result is sought to be obtained vary greatly in character; some are sensible and practicable; some—and it is to be feared a great number—are very much the reverse. Even now many of the authorities who superintend the preparation of our athletes are ignorant and illiterate, and work by rule of the thumb without any accurate knowledge, guide or intelligence.

The racing cyclist of to-day should do his best to get the assistance of a modern adviser who works upon reasonable and rational lines. The main idea of the modern school is that every precept laid down is to be carried out to the letter. Preparation of the frame and physical powers for severe exertion is not a task which should be undertaken in haste. If a man has but a few days in which to prepare for an important contest, his mentor will do well to keep him off the track altogether, and thus let him start quite unfit, so that his miseries may cause him to desist early in the struggle.

To start in a contest when out of condition is a very serious matter, both to the novice and the rider who has been once highly trained. The novice, unless he has once undergone an adequate preparation, may very easily damage or strain himself. The once highly-trained rider is in still greater danger. There is no doubt that in athletics a mental training goes on side by side with the physical development—a quickening of the mind, an enlarged nervous control over the limbs; in short, a reflex action of the mental over the physical powers, which has very much to do with success. Physical training is easily lost; a very short spell of idleness will cause the rider to lose much of his power for sustaining prolonged exertion; he gets fat, and his wind gets short; in fact, all the results on his bodily functions of hard and careful training pass away, and he is "unfit" in every sense of the

word. But, although the subject is left with but little of the muscular fitness that once distinguished him, and with skill impaired by want of condition, the mental training remains, and is, to a very great extent, permanent. That supreme command, which the mind in a moment of highly-strung excitement—such, for example, as the sharp finish of a race—brings to bear upon the physical powers, takes considerable longer than mere physical powers to develop ; but once developed is very rarely lost. Though the athlete may be physically unfit and out of training, the tyrant mind remains imperative. The flaccid flat-laden muscles, the stiff, unexercised limbs, the clogged and unexpanded lungs, when called upon for a tremendous effort, are not fit for the task, and the result is an inevitable breakdown. Lucky is the athlete who, under such circumstances, only strains a ligament or ricks a joint and escapes heart disease or other insidious ills.

A fatal error into which many racing men fall is overwork or, rather, over-competition. Any one who carefully considers the principles of exercise and training will see that it is impossible for a man to be actually in perfect condition for a long, consecutive period of time. Many riders, by careful and judicious training, maintain a wonderfully high average of condition, but this falls short of their best form.

The first thing every trainer should do when he takes a man in hand is to weigh him, and make a note of the exact weight, stripped. He should then consider whether he is fat or not ; if of spare habit, he will not require nor, indeed, endure so much hard work as another who carries a superfluity of adipose tissue. The track chosen for his work should be of easy access, safe, with easy corners, and, if possible, he should secure a companion or two to assist him and ride with him. He should visit the track twice a day, about 11.30 or 12 o'clock, when he should take half an hour's steady work at half speed. As soon as the half hour has expired, let the rider dismount and, without loitering, go straight into the dressing room and sit in a corner out of the draught, put a towel around his neck and remain quiet. In a few moments profuse perspiration will follow ; and should be encouraged by a gentle friction with a towel folded over the hand, while, if a rubber is present, he may, by a vigorous rubbing, set up a glow over the whole surface of the body. A good many rubbers, especially

those who have a number of men to look after, hurry the rubbing process, and thus defeat the very object they are desired to accomplish. In nearly every case, under these conditions, there is a second flow of perspiration after the man has been completely dried; when this has been removed, and not until then, the rider may guard against cold by taking a shower bath of cold water. This closes the pores of the skin and precludes the possibility of catching cold; the rider should then dress, preferably in flannel, at least with some thin flannel garment next the skin. In the evening he should revisit the track for the real work of the day. He should essay quarter-mile spurts, with an occasional half-mile spin, and once a week a regular mile trial against a watch. In doing his work the rider should be careful to note the following points, and see that he is carrying them out: *Always to look where he is going.* This is very essential, especially for a man who trains much alone, as such riders often get unconsciously into the trick of grinding themselves by the edge of the track, and thus in actual competition may run into a man before they can avoid it.

Hold the body still and sit down. A great many riders get up off the saddle when sprinting. This is a serious fault; it unsteadies the steering and diminishes the available power. The arms should assist in keeping the body steady and the saddle should touch always. A very slight grip of the peak of the saddle between the legs will be found of notable assistance in steering round corners.

Don't shake the head. Some flyers of note do wonderful things with their heads when sprinting. It is hardly possible for the rider to watch his opponents and judge his course when his head is in constant motion. The head should be thrown back, the face to the front, almost in the same position of that of a swimmer; it should be held right still over the driving wheel, with the eyes directed well forward.

LONG DISTANCE RIDING

In order to be capable of equaling the present records for long distance work, it is absolutely necessary to train for such work conscientiously under the supervision of a competent trainer, one who has common sense and is careful not to permit his charge to overwork while in training, and one who, when the time comes for the trial, is directive and has under his thumb a manageable set of pacemakers possessed of good judgment, men who have trained just as well in their pace and pick-ups as the aspiring record-breaker. A man may be ever so good, well trained, etc., but he can never equal or come near the record if the pacee is not the best.

In order to prepare for and overcome the severe punishment attached to a ride lasting one hour, it is best to ride two months in all kinds of races and on all kinds of tracks, gradually increasing the distance of the races. Set much of your own pace. This gives endurance. Try an unpaced mile once a week, doing your best at each trial. This will enable you to observe your improvement. Finally, about two weeks before your trial, have pacemakers at the track you are training on begin training in conjunction with your own. Stop taking part in all races at any distance, and confine yourself to the ride in view. Ride ten miles in the morning, first two or three unpaced, then have the pacing machines drop in and pick you up. Cover the seven or eight remaining miles at a fast pace. Have the pacemakers practice making the pick-ups. In the afternoon cover some twenty miles at a time, paced most of the way at the rate of 2:07–2:15, finishing with a quarter-mile sprint, endeavoring at the time to best the pacing machine at the tape. Always have a thorough rub after each ride; use cold water, sponge occasionally above waist to harden the muscles. The legs must be soft and pliable. See that the legs do not cramp, and if they do, tell the trainer where, and let him rub plenty of goose-grease on that part at night after taking a hot bath, rubbing plenty of liniment on in the morning, wiping clean with

rough towel. Have him pay special attention to the parts that are cramped.

No one knows what a severe test it is to body and mind to ride for one hour without first having tried it—that is, at record speed. If one feels a little nervous before the trial it will aid him to endure much, as he will ride on his nerve and probably succeed in his attempt, with good pacing. The one great difficulty in this country is because we have not paid enough attention to pacing facilities. The success of a trial depends upon the quality of the pacemaking. The pace must be, in order that a man lasts for one hour, very steady. By this is meant that more than twenty-nine miles are to be done in the hour, each mile must be at an even gait. If a man cannot do twenty-nine miles in the hour his schedule must be slower, in order that he should finish.

No stimulants are needed while riding. The excitement acts as a strong stimulant. All the attention of the trainer should be given to the making of good connections by the pacemakers. He should have signals known by the pacemakers that they may be slowed up when the pace is getting too fast, or more faster when too slow—in other words he must see to it that the pace is absolutely even and that the man has nothing to worry about.

After the ride is over a little stimulant can then be taken if needed. The man should he immediately covered by blankets, each part dried perfectly, keeping the cold air well away from the chest and other parts. Get the man dressed as quickly as possible, away from the track and curious eyes, to quiet, and thus give his nerves a chance to settle, not permitting him to eat his dinner for at least an hour and a half, getting him to bed earlier than usual.

It is an established fact that there is no particular rule or stipulated routine that could be universally recommended for the guidance of a cyclist in training. The prime reason of this is that no two men are built exactly on the same lines, and the treatment suitable to one may be entirely unsuited to the condition of another, so it is a case of suiting the physic to the patient's taste. However, there are a number of facts known to modern trainers which every man must stick to in order to be successful on the track.

In the spring, before doing any work at all, the stomach must be

got into shape by a thorough physicking, which relieves the system of all bilious and troublesome matter. This leaves the body in a very weak condition, and it must be strengthened gradually by keeping very quiet and eating light food, such as milk toast, soft boiled eggs, etc., for a few days, after which time more strengthening food may be taken.

The first three days very little exercise is sufficient; for instance, three to six miles a day, at about a 3:20 to 3:30 gait. This is gradually worked down day by day, until the end of a few weeks the pace is brought down to about 2:50. The third week will show a more rapid change in the condition of the man, the miles will be rolled off at about a 2:30 to 2:35 clip, and the distance by this time will be lengthened to about nine miles each day. A little faster work may now be indulged in, and about one-half mile can be reeled off at about one minute (paced), to show the condition of the man in regard to endurance. If he is found wanting, he must again return to plugging, while, on the other hand, if he has the required amount of endurance, he may start to sprint a short distance.

During all this time great care should be taken not to reduce too rapidly, as this will cause the skin to become feverish, but the superfluous flesh should be turned into solid muscle rather than removed altogether. In short, no attempt should be made to reduce the man's weight below a medium point, so that at the beginning of the racing season he will have a little flesh to work on, as he will gradually be worked down during the hard season's campaigning.

It is at this point that the trainer should get in his fine work, turning the superfluous flesh into muscle. After each work-out the man should have a thorough drying with coarse towels, followed by a most thorough massage, every muscle being worked and manipulated. The flesh on the stomach, back and loins is rolled in the fingers until the whole body seems to be covered with but a slight layer of flesh sheeting over the muscles. Care should be taken to keep the muscles of the legs soft and pliable, as there is no speed in a muscle that becomes hard.

After the body and muscles have been put in fine condition, the sprints are gradually lengthened, until the rider is able to cut a full quarter of a mile at top speed and finish strongly. Being able to do

this, he is in condition to begin the season's campaign, which opens the latter part of May, and lasts until the end of October. when the record season begins.

A trainer cannot spend too much time with his man, especially after races. Every moment in this work will doubly repay rider and trainer, as the more the muscles are worked the more flexible they become and the less liable to stiffen up or bind after a sprint. The racing man cannot give himself too fully into the hands of his trainer or rely too much on the latter's judgment, provided the trainer is a competent man, as the trainer is working for himself as well as the rider, and the record of the latter's victories and defeats is the record of the trainer's work. The man in training should avoid eating pastries and all kinds of rich food. A little fruit eaten in the morning does more good than harm, and the less coffee or water taken the better.

This course of training will not apply to all men, as the constitutions of all men are not the same, but this is the course which is followed very generally.

QUALITIES THAT MAKE THE CHAMPION.

BY FRANK McCOLLOUGH.

What are the qualities necessary to become a successful racing cyclist? is a question that is often asked by the thousands of cyclists imbued with the belief that they are destined to become a Zimmerman or a Bald, and it is to these persons, as well as the thousands not advanced in cycling parlance to whom the writer will tell of what is essential to become a foremost figure in the racing world. The answer to the foregoing question, and one that I believe all racing men will agree upon, is contained in the following, in the order named: First, strength; second, fast wheel; third, training; fourth, confidence; fifth, headwork; sixth, trainer. These are the qualities which make the riders of championship calibre, and to each one, or any, it is an utter impossibility to ever expect to attain a height in the cycle-racing world other than a rider of mediocre ability. Cycling critics and others may dispute this claim, but a little reasoning will prove to the most skeptical that the above is correct, as I will proceed to show my readers. The first quality is

STRENGTH,

which takes precedence in all things athletic. No sane person will dispute this claim, for were this quality to be lacking, and the rider to be the possessor of the remaining five, he would still be as badly handicapped as a bird without wings, for no matter how much or how hard he trained with the best of wheels, skillful as he may be, confident and aided by wily trainers, he would find that when the sprint for home came that the stamina he lacked was the essential thing. I can recall to mind instances wherein riders have won trial heats in good style and lost the final heat to a less speedy but stronger rider, who had barely qualified in the trial heat, whilst the public believed

the speediest rider had won, whereas, in truth, 'twas the stronger. The reason is plain. The stronger rider has the ability to sprint the last eighth of the race, say, in 14 seconds, which enables him to qualify. The winner of the trial heat sprints in 13 2-5 seconds, which pumps (exhausts) him to such an extent that he can barely do the eighth in 14 1-5 in the final heat, while the stronger rider does 14 again, which lands him a winner. Some cyclists not agreeing with the writer on this view will point to Michael as an instance where strength is not a factor, but those who are acquainted with the Welsh rider know him as a wonderfully strong little athlete. In brief, what is it that compels a rider to stop after a fierce sprint, and the answer is that he's exhausted. Yes, that's just it exactly. If he were not tired out he would continue to sprint indefinitely. Therefore, it's it's plain that strength comes first in the making of a champion racing cyclist. This point settled, we'll turn to the second necessary quality, the

FAST WHEEL,

something that is most often overlooked by a majority of the riders, who imagine that most any good running wheel will answer. It is right there where a serious mistake is made, for there is a best in everything, and if you would win you must ride a fast whecl ; by this is meant a cycle equally as speedy as your opponents ride, for to ride a wheel less speedy than your opponent gives him an advantage sufficient to defeat you in the sprint. In selecting the wheel, get one that is in accordance with your height and weight. If you are tall and heavy, ride a 23-inch frame of 24 pounds, with 44-inch wheel base ; if you are but 5 feet high, and weigh only 100 to 110 pounds, ride a 20-inch, of 18 pounds, with $4\frac{1}{2}$-inch wheel base. Allowing that the rider has the first two qualities, we will take up the third one, that of

TRAINING,

which is a quality that is most often abused through ignorance, either by lack of training or overtraining, most often the latter. To know how to train oneself properly and without injury is an art which few possess. Nevertheless, it a rider would become a champion he must

have training, and, if possible, attain the criterion of the same. Bicycle training differs greatly from the manner of preparing for other sports. Cycle racing is fast riding, and the one and only way to train for the same is by riding the wheel, although running may be of some aid. The training should consist in long rides over the country roads daily, varying the distance from ten to seventy-five miles *ad libitum*. This road work should be commenced about the middle of March and continued for a period of two months before any track riding is done, as these long grinds taken daily give to the rider not only ease of motion, but the staying power which is so needful in the sprint. This road work should be mostly unpaced, on a fast road wheel weighing at least 27 to 28 pounds, with 1 5-8 tires, with an occasional pull-out (pacing) of fifteen miles once or twice a week. After two months of good hard road riding the rider should take to track training, which consists of a five-mile grind every day, sprinting the last eighth ; this to be followed a half hour afterward by a sprint of an eighth or a quarter mile. At this stage of the training the rider should ride the five miles at a three-minute clip, and the sprints in fifteen and thirty seconds, gradually lowering the time each day until the five miles can be ridden at a 2.20 shot and the sprints in 12 4-5 and 26 seconds, all unpaced. The training should be done in the sun, about three hours after eating, the best time being the afternoon when man is the strongest. Three weeks of track training, from the time of leaving off road work, should be sufficient to get in racing condition, after which the rider has but to ride his daily five miles, with an occasional sprint, to remain in shape. After each ride if finished the rider should be given a good rub-down, with at least a half-hour's kneading of the leg muscles, the more the better, as they should be soft and mushy, resembling jelly, for there is no speed in hard leg muscles, and without constant massage they rapidly harden. Some riders like the idea of starting to train on a monstrous high gear of 130 or 140, and lowering it until they reach their usual gear, while others commence on an extremely low one of 56, and constantly increase. The majority use but one gear continually. The best solution of the problem is to use the gear that gives you the best speed and tires you the least. The fourth quality,

CONFIDENCE,

is a factor that tends to bring many a rider to the front. To feel confident of your ability is often half the battle. Confidence in one's self, as history has shown, has made more than one man President, in fact, many a race has been won in the last fifty yards in a close struggle by a rider who was strong of the belief that he was the faster man, this feeling being sufficient to spur him to victory. Once a rider loses confidence in his ability to win he may as well hang up his racing togs and join the ranks of the upturned bars, to start in a race with the feeling that your opponents are sure to defeat you; yet, I'll do my best! is to invite almost certain defeat. Some writers confound this trait or quality with pluck, but pluck is that quality which evinces itself when the rider is well nigh exhausted and he refuses to yield to nature's demand to desist through sheer force of will power. The next quality is,

HEADWORK,

and one that most every rider believes he possesses. Tricks, craftiness, etc., all come under this title, which means the securing of an advantage over your opponents in various ways, such as forcing your opponents to set pace for three-fourths of the race while you lay back of the bunch protected from the wind. The watching of the bunch and of riders about to make a steal, and to catch their rear wheel in case they do accomplish the trick. To know when to make the jump for the final sprint. To drop back as you near the point at which the sprint usually begins and go by the bunch with a rush gaining a lead before they are aware of it.

To feign exhaustion, if in the terrific sprint, in the hope that your opponent may ease up the merest trifle in speed. Many a race has been won in this manner. With the aid of a companion pocketing a dangerous rider. To keep from being pocketed. To know when to go to the front. To watch constantly for openings and for riders who back pedal and elbow. Until the rider has mastered the above tricks or traits can he be considered proficient in headwork? The sixth and last quality in the makimg of a champion rider is the

TRAINER,

who, if he be a good one, is largely responsible for the rider's success. Much could be written about trainers and those who pose as such. The term "trainer" is is commonly interpreted as one who is an instructor who understands thoroughly the subject of which he endeavors to instruct, and yet, how many trainers of racing men are there that answer this requirement?—not one in a hundred. Every rubber and pusher-off is called a trainer. Fancy a trainer who has never ridden a wheel at all directing a rider's training, and telling him how many miles to work out and how often to practice sprinting. Seems ludicrous, doesn't it? but it's a fact, nevertheless. A trainer of a racing cyclist should be one who has done some racing in his time. He should know something of anatomy and be a man of judgment. He should be able to note a rider's condition by a glance of the eye. He should know everything about massage and its results in order to direct the rubber how to rub and knead a rider properly. Every rule in the racing book should be known to him. He should know the mechanism of a bicycle thoroughly and be able to adjust it so that the rider gets the most speed out of it. He should direct the rider in his diet. Past experience should serve to tell him when a rider is sufficiently trained. He should be able to decide whether a rider needs to be eulogized or rebuked in order to spur him on to better efforts. He should see to it that the rider's wheel is in perfect order for every race. And the rider that combines these six qualities will without doubt make a rider of the championship order. The facts stated above are the result of experience as a rider, rubber, trainer, manager, race meet promoter, cycle salesman, repairman and writer.

HOW TO BECOME A WINNER.

BY EARL W. PEABODY.

Winner of 110 Firsts in 1897.

I hardly know what advice to give to the candidate for honors in the bicycle races, so much depends on the previous training and the natural capabilities of the man. But the following suggestions will be found useful by most young riders.

The first thing to be sought for is strength. Speed comes afterward. In most cases the man cannot begin real outdoor training until April 1, and this is early enough. Too long or too hard training is much more injurious than not enough.

I would recommend simple, light systematic exercise previous to April 1. This exercise may be of any kind, the whole object being simply to get the system into a normal healthy state. Home trainers I do not believe in.

The first of April having arrived, the candidate should begin his special training. Steady, hard work with no sprinting should be his programme at first. He will probably engage in no intercollegiate contests before the middle of May, and it is for these he must train, not for preliminary trials. About two miles at a good stiff pace, say three minutes, if he works alone, and 2:50 if he has one or two others to change pace with him, is enough work at first. There should be no sprint or attempt to pass the pacemaker at the finish of the work. This sort of work should be continued a week, and then the distance should be increased to three miles. After another week five miles should be negotiated. At the end of the third week it will be time to begin sprinting. About three one-hundred-yard sprints, with the wind, with a good rest between each ride, and then a stiff mile will do for the fourth week. The fifth week I should suggest two full eighth mile sprints, and then after a good rest a good stiff

mile with a spurt of about one hundred yards at the end of it. After five weeks the candidate should ride a hard mile, closing with a fast sprint for the entire last eighth about twice each day, substituting a quarter-mile flying start, unpaced trial for one of the miles about every other day. All work should be done under the trainer's eye and the time carefully noted. I would not dismount to rest, but remain on the wheel, riding easily. All sprints should be with the wind ; the object being to develop fast motion. No distance greater than a quarter should be attempted at full speed. There being no handicaps to be contested, nothing further than that is necessary, and such work retards the development of a man's sprint. Do not use an excessively high gear, and use a gear about six inches lower than you intend to ride during the first four weeks of training. Avail yourself of your trainer's experience. Whether he be a bicycle trainer or not, he can tell you whether you are doing too much or too little work, if he is a competent man. As to position, get a comfortable position during the first week and stick to it. Don't get your handle bars too low. Remember that your elbows will bend on occasion. Never, either in training or racing, "duck your head" so that you cannot see the whole track in front of you. You can ride just as fast without doing so. Wear stockings or long tights and plenty of other clothes on cold days, so as to run no risk of taking cold. Follow the regular training, and remember that a bicyclist, above all others, must have his stomach in perfect order if he wishes to succeed,

CYCLING AND WALKING

This is a question one frequently hears asked, especially by those who have no practical experience of the cycle. Some do not even admit that it is easier. To them it appears paradoxical that to propel one's own body and a bicycle should be easier than to propel the body alone. But to practical cyclists it is a fact beyond dispute—a matter of every day experience and any person can, after a season's practice, ride fifty miles as easily as he could walk fifteen.

Various reasons are put forward in explanation of this; such as the smooth and equable motion of the bicycle; the speed and the consequent exhilaration produced by inhaling more oxygen; the continual change of scenery beguiling the tedium of the way, etc. All these have their effect; but there is a solid mechanical advantage possessed by the cycle over the natural means of progression, which lies at the bottom of the mystery. A short discussion of this may not prove uninteresting.

Some years ago when the writer was an undergraduate he attended lectures of a certain professor who was fond of illustrating mathematical principles from examples which would appeal to his audiences. In this way the very question which heads the article cropped up, and was disposed of in the way described below. It is so simple that it cannot be new, and yet it is known to comparatively few.

The basis of this explanation is that walking is a horizontal but undulatory motion, whereas cycling is a horizontal motion in a straight line (the road inequalities being disregarded).

The truth of the first proposition is evident. When a man walks his legs are alternately side by side for a moment, and both touching the ground some distance apart for a moment. The legs may be considered as describing alternately arcs of a circle, whose centre is the hip joint, the radius the length of the leg. Now, when the legs are side by side the whole body is in a straight line, at

its greatest height above the ground. But when the legs are stretched apart, each foot touching the ground, the distance of the body from the ground is no longer the length of the leg, but somewhat less. The legs are in this case in position like an inverted V, and the distance of the vertex of the letter form a line joining its extremities is obviously less than the length of either leg. For if the extremities are joined, making a complete triangle of the letter, and if then a vertical line be drawn equal in length to either of the sides from the vertex of the triangle downwards, it will be found to project below the base line. But this central line occupies the position of the legs when side by side; hence, the body must be higher when the legs are side by side than when stretched apart in the act of taking a step. The body therefore falls, and it must be raised again before the next step.

This produces an undulatory motion which is inseparable from walking. The amount of undulation varies; it is supposed to be about two inches in Europeans, but in Negroes much more, At each step therefore the whole body is raised two inches, or the sixth of a foot, and if a man weighs 144 pounds he will have to do 24 pounds of foot work at each step, foot-pound being as its name implies, the force required to raise one pound through one foot. An ordinary space is supposed to be about thirty inches, or two and one-half feet, so that the number of times two and one-half feet is contained in a mile multiplied by twenty-four will give the number of foot-pounds of work which the said man must perform in walking a mile. And be it observed, this is all sheer waste and does not include the force required to propel the body forward in a straight line. It is hardly necessary to prove that a bicycle moves in a straight horizontal line, with the rider on it; but it is not so easy to find the force required to keep a bicycle in motion. But it can be roughly estimated in this way. A good spring balance is attached to the front of a bicycle and a long cord to the other end of the balance, which an assistant holds. You then mount the wheel, and when it is properly started the assistant runs and tows (another bicycle could do this better). The rider must then put his feet on the rests, and craning forward his neck observe what strain is indicated by the balance. If it be say, seven pounds, then seven times the number of feet in a mile will be the

number of foot-pounds of work performed in going a mile. I myself made experiments of this kind and so did other students. The results were very dissimilar. However, our worthy lecturer, who had suggested this method, tabulated the results with the utmost gravity. The average was about seven pounds, but some were as high as ten pounds, others only five or six pounds. Of course, the rate of towing directly affects the results obtained. The strain of seven pounds appears to correspond with a speed of eight miles an hour The work done (according to this) in going a pace is (7x2¼) foot-pounds against a waste of twenty-four foot-pounds walking, for a man of ten stone four pounds. This certainly shows a balance in favor of cycling.

The experiments above described were crude in the extreme, and the machines were heavy also. Some readers may possibly investigate the question themselves. A bicycle would be the best to tow with, and there should be a means of estimating the speed corresponding with a certain strain. The road, too, should be quite level, fairly smooth, and the motion not against the wind.

HOW "MILE A MINUTE" MURPHY TRAINED FOR HIS RIDE

BY CHARLES MURPHY.

For years before I made my trial, I felt quite confident that if I could get some one to build a board track for me I could go behind a locomotive for a full mile inside of a minute.

When I discussed these things, people would look at me as though I was crazy. They thought I did not know what I was talking about and was looking for advertising. Such was not my purpose, however I felt that I could make a record that would live for years and years after me. The danger of it never occurred to me, and when I was told that I would take my life in my hands, it did not affect me a particle. I felt that I had the nerve and stamina to make the trial and accomplish it successfully. For a long time nothing whatever came of it.

A friend of mine, Mr. Walter Sammis, however, took the matter up and had several conferences with Mr. H. B. Fullerton, of the Long Island Railroad. Mr. Fullerton being interested in cycling, and also attached to the Long Island Railroad, realized that it would be a great scheme for the road to build such a track and have this trial made under its auspices, and finally the railroad company agreed to it.

I was then working pretty hard in the bicycle business and did not have the time to train that I should. Immediately upon receipt of the information that the contract was signed, I sent for John Stewart, an ex-amateur boxer, to train me, and I started in diligently. I immediately began to diet myself, and kept it up for three or four days, taking a little exercise with light dumbbells, boxing a few minutes and finishing up with riding on a home trainer.

On June 14th, 1899, I went to Babylon, which is only a few minutes from Maywood, L. I., where I was to make t I had

no trouble whatever in finding good roads. The roads I did my work on principally were one running north and south and another running east and west. I did plenty of road work, plenty of dumbbell work to strengthen myself, boxed, skipped the rope, and took ten minutes exercise each day. I did this steadily until June 30th, the morning of the ride. When training, I always believe in eating substantial food, such as eggs, steaks, chops, poultry and vegetables. I had regular hours, also, which is the best thing for a man when training, and I drank very little water or liquids of any kind. I am a great believer in light, quick work.

As to the ride itself, everyone knows about that. It did not affect me any, but I would not duplicate it under the same circumstances for love or money, as it was the nearest thing to death I had ever experienced.

"MILE A MINUTE" MURPHY'S RECORD OF 57 4-5 SECONDS

As a trial for his final effort for the one mile bicycle record, Charles M. Murphy, the Brooklyn cyclist, on June 21, 1899, rode the distance in sixty-five seconds at Maywood, L. I., riding faster than any other human being had ever covered the distance, and using only his own power in propelling the bicycle.

This performance was remarkable in several ways. It was the first time he had ever ridden behind a locomotive; he faced unknown dangers, for death would certainly follow any accident to his wheel or the train, and he was riding in a maelstrom of whirling dust, cinders, paper and other small particles of matter.

On the rear platform of a special car a wind shield had been constructed which, looking something like an enormous vestibule, extended back from the platform and on either side and overhead four feet. Below the car a wind cutter shaped like a huge wedge cut off the air pressure. Murphy rode in and out of the vestibule and when the train was in motion he was practically riding in dead air.

For the first quarter of his gruelling grind Murphy's time was 16 2-5 seconds. The next quarter was a fifth of a second slower, and the half mile was passed in 33 seconds. The third quarter was slightly faster, and the watches tallied 49 1-5. The last quarter was rode in 15 4-5 seconds, or 1 minute and 5 seconds for the mile.

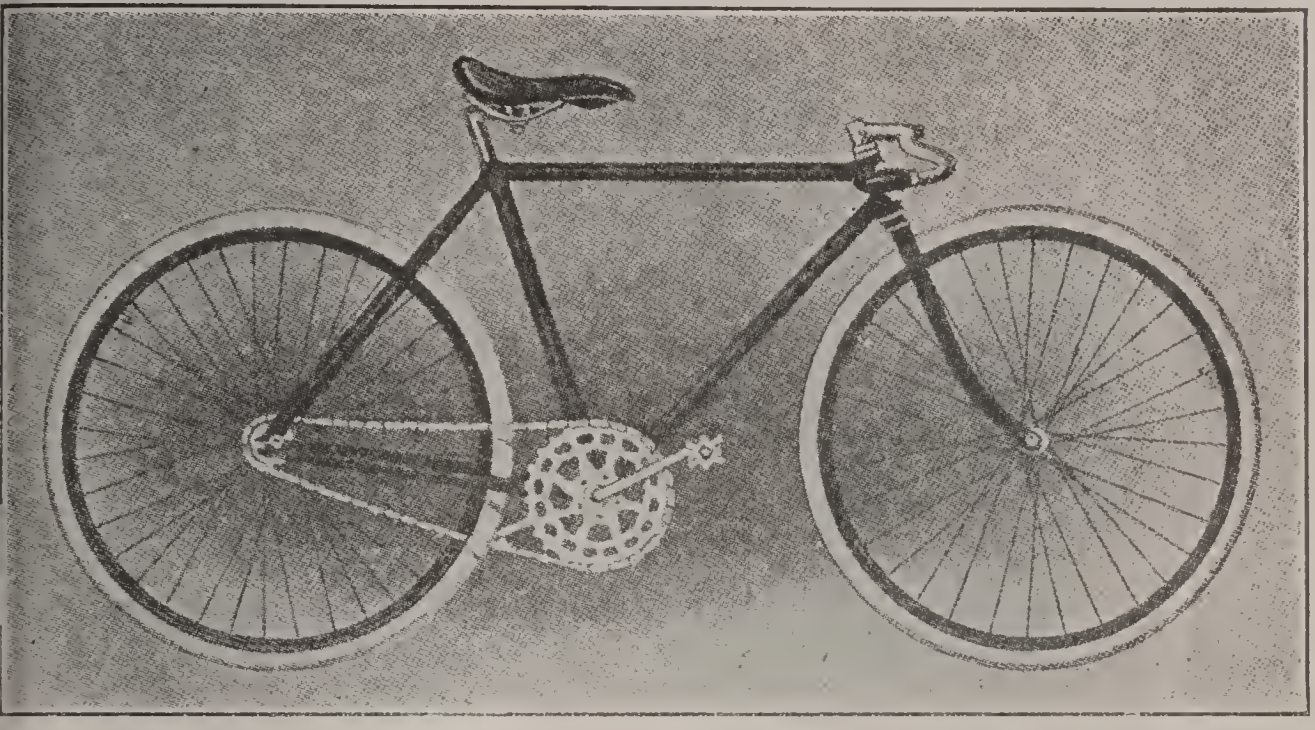
On June 30, 1899, in his final attempt he was again paced by a locomotive, and this time lowered his record of 1 minute and 5 seconds to 57 4-5 seconds, under practically the same conditions as attended his first trip.

Murphy covered the first quarter on this occasion in 15 seconds, which was 1 2-5 seconds faster than the time made for his

first quarter in his ride on June 21st. He rode the second quarter in 14 2-5 seconds, making a total of 29 2-5 seconds for the half mile; the third quarter in 14 3-5 seconds, making a total of 44 seconds for the three-quarter mile. The engine was warmed up by this time and flew into the last quarter at the rate of sixty-four miles an hour.

The roar and din of the train was terrifying to those who were watching Murphy. The cyclist had lost his steadiness and was laboring madly. Time and again he started to drop back, but with a supreme effort he managed to hang on. The finish flag flashed by in 57 4-5 seconds, the last quarter being travelled in 13 4-5 seconds.

Spalding Bicycles



Spalding Men's Model

Regular Equipment **Price, $34.50**

FRAME—Main frame tubes 1 inch, flush joints, crank bracket dropped 2¼ inches at seat post cluster with binding bolt; fork with arched crown, drop forged; Spalding pattern; sides heavily reinforced and tapered; height, 22 inches. Options, 20, 24 and 26 inches.

FINISH—Black, with Spalding Red Head; rims to match Options, plain black, nickel fork, or red with black head; rims to match
Two weeks' time required for fancy colors

WHEELS—28-inch diameter, 32 spokes front, 36 rear Hubs of new design, spindle centers, turned from solid bar

TIRES—1⅜-inch Fisk No. 66 single tube, guaranteed Options, 1½ inch, 1⅜ or 1½ inch Hartford No. 77 single tube, guaranteed

CRANKS—7-inch oval, two-piece Right crank and axle forged in one piece. Left crank in separate piece, with locking device of new design

SPROCKETS—26 teeth front, 9 rear (81); front sprocket fastened with five bolts and nuts. Option, 24 front, 8 rear

CHAIN—3-16 inch diamond, 1 inch pitch.

HANDLE BAR 20-inch adjustable, with forward extension shaft Option, 22-inch. Grips, stitched leather.

EQUIPMENT—Wheeler saddle. Pedals, 3⅝-inch rat trap Option, combination; tool bag and tools.

NAME PLATE Spalding pattern.

Spalding Women's Model

General specifications same as Men's Model, with the following exceptions: Regular equipment, black enameled finish; gear, 68, 22 x 9 sprockets; cranks, 6½ inches; pedals, 3¼-inch combination; saddle, Hunt No. 77B; steel rear wheel and chain guards; straight handle bar shaft; Options, frame 20 or 24 inches; gear. 74, 24x9

Price, $34.50

Extra Charge for Bicycles Equipped with Coaster Brake, $5.00

Spalding Bicycles

SPALDING NYACK

MEN'S MODEL

Regular Equipment **Price $24.50**

FRAME.....Main tubes 1 inch, flush joints, crank bracket dropped 2⅜ inches; fork with dropped forged arched crown, Spalding pattern, enameled to match frame, sides reinforced and tapered; height, 22 inches. Options, 20, 24 and 26 inches.

FINISH.....Black, with red head, rims to match. Options, plain black, royal blue, with red head, red, with black head; rims to match.

WHEELS.....28-inch diameter, 32 spokes front, 36 rear. Hubs of new spindle design.

TIRES.....1⅝-inch Fisk single tube, guaranteed. Options, 1½ or 1¼ inches.

CRANKS.....One-piece drop forging of high carbon special crank steel, half diamond, 7 inches long.

SPROCKETS.....Accurately finished and milled to fit a 3-16 inch chain; 26 teeth front, 9 rear (81). Options, 22 and 24 front, 8 rear.

CHAIN.....3-16 inch diamond, 1 inch pitch.

HANDLE BAR...20 inch adjustable. Option, 22 inch.

EQUIPMENT.....Wheeler padded saddle, No. 490; rat trap pedals, 3⅝ inches, of neat design; tool bag and tools.

NAME PLATE....Nyack (Spalding design.)

Spalding Nyack Women's Model

General specifications same as Men's Model, with the following exceptions: Regular equipment, black enameled finish; gear, 68, 22 x 9 sprockets; cranks, 6½ inches; pedals 3¼-inch combination; saddle, Wheeler No. 495; steel rear wheel and chain guards. Options, frame 20 or 24 inches; gear, 74, 24x9; pedals, 3⅝-inch combination.

Price, $24.50

EXTRA CHARGE FOR BICYCLES EQUIPPED WITH COASTER BRAKE $5.00

Spalding Bicycles

Spalding Juveniles

BOYS' MODELS 704 and 706

Specifications and Equipment

FRAME.....Main frame tubes 1 inch, flush joints; seat post cluster of new design with binding bolt; seat post of drop forged type, height 18 inches on Model 706, 16¼ inches on Model 704; fork crown, drop forged, with diamond top.

FINISH.....Black enamel, with red head; rims to match. Options, plain black, Spalding royal blue or red. Two weeks' time required for fancy colors.

WHEELS.....New hubs, with spindle centers turned from solid bar; rims to match frame.

TIRES.....Fisk juvenile, single tube, 1⅜ inch on all models; guaranteed.

GEAR.....64.

CHAINS.....3-16 inch diamond.

CRANKS.....5½ inch oval, one piece, half diamond.

PEDALS.....Juvenile, rubber.

SADDLE.....Juvenile, padded.

HANDLE BAR..Juvenile, upcurved, adjustable.

NAME PLATE..Spalding pattern.

BOYS' MODEL 704, 24-inch, $22.50 | BOYS' MODEL 706, 26-inch, $25.00

GIRLS' MODELS 705 and 707

In general construction the same as corresponding Boys' Models, with the exception that the frame height for the Model 707 is 17 inches, and for the Model 705, 15½ inches; lower main tube is straight and the upper one is gracefully curved and dropped to permit ease of mounting and dismounting; rear wheel and chain guards. Regular finish is black enamel.

GIRLS' MODEL 705, 24-inch. . . . $22.50
GIRLS' MODEL 707, 26-inch. . . . 25.00

BOYS' MODEL 700
GIRLS' MODEL 701

For the little tots who are too small to ride the regular sizes of Spalding Juveniles we carry a few models with 20-inch wheels and 1¼ Fisk single tube guaranteed tires. The height of the boys' frame is 15 and the height of the girls' frame is 13½ inches; the gear of both models is 46. The other equipment is the same as that of the larger sizes.

BOYS' MODEL 700
20-inch, $20.00
GIRLS' MODEL 701
20-inch, $20.00

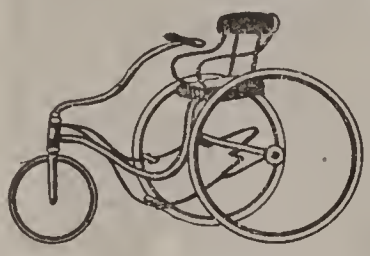
Extra Charge for Bicycles Equipped with Coaster Brake, $5.00

VELOCIPEDES

The frame of this velocipede is made of ⅞ x 18 gauge steel tubing, heavily reinforced at the seat post. The fork is made of best quality steel tubing, with boxes at the ends of the forksides to hold the bearings. Drop forged round cranks with 3¼ inch throw, keyed to steel shaft in front wheel; nickel-plated.

		Each
No. 1V.	16-inch Front Wheel, 10-inch Rear Wheels.	$10.00
No. 2V.	20-inch Front Wheel, 14-inch Rear Wheels.	12.50
No. 3V.	24-inch Front Wheel, 18-inch Rear Wheels.	15.00

TRICYCLES



Our Tricycles are similar to our Velocipedes in general construction. Seat with back upholstered in leather. The seat post is extra long, and so secured in frame that it cannot work loose, at the same time permitting an adjustment of six inches. Frame finely enameled in plain black. Packed in single crates.

		Each
No. 1T.	10-inch Front Wheel, 18-inch Rear Wheels.	$12.50
No. 2T.	14-inch Front Wheel, 24-inch Rear Wheels.	15.00
No. 3T.	14-inch Front Wheel, 28-inch Rear Wheels.	17.50

FISK BICYCLE TIRES

No. 88H.	Thread fabric, raised tread.	Per pair, $8.00
No. 66EH.	Extra heavy, corrugated tread	" 8.50
No. 66.	Plain thread.	" 7.50
No. M.	Massasoit, plain tread.	" 5.00
No. P.	Premier, plain tread.	" 6.75
No. PT.	Premier, tough tread, raised.	" 7.00
No. P26.	Premier, juvenile, plain tread	" 5.50
No. P24.	Premier, juvenile, plain tread	" 5.25
No. P20.	Premier, juvenile, plain tread	" 5.00

Never Out Oil Lamps

Each, $3.00

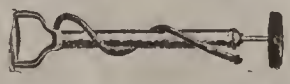
Columbia Oil Lamps

Each, $1.50

Sager Toe Clips

Per pair, 25c.

Foot Pump



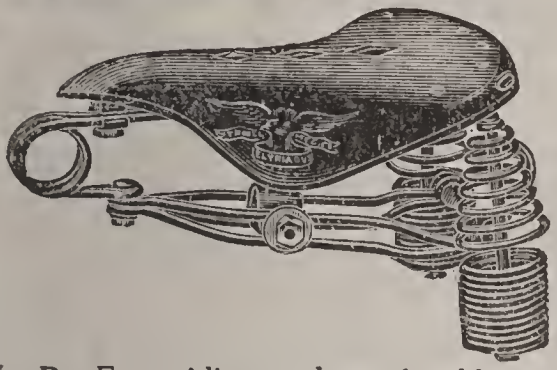
No. 2.	Foot Pump.	$ .50
No. 10.	Foot Pump.	1.00
No. 8.	Foot Pump.	1.75

Siren Horns

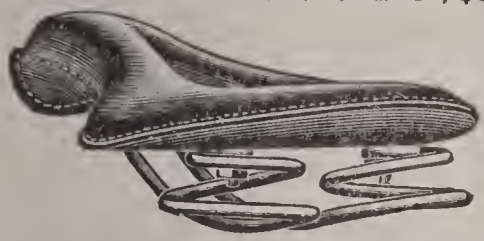
For Bicycles

Each, $1.00

Person's Peerless



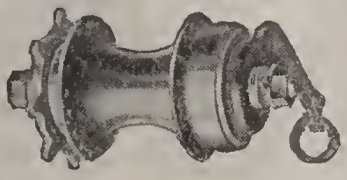
No. P. Easy riding and comfortable, and especially adapted for long distance riding. 11 x 9 inches. . . . . Each, **$3.50**



The No. 5 saddle is made of the best selected material throughout, and furnished with coil spring, heavily padded.

No. **5.** Men's. 9½x8 inches. Each, **$1.25**
No. **5L.** Women's. 8¼x8 inches. " **1.25**

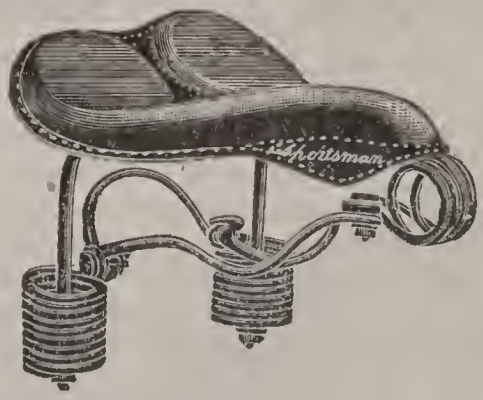
The New Departure Coaster Brake



In design and construction it is about as near perfection as anything can well be. Its working is positive and efficient, and whether employed as a coaster or as a brake, it is absolutely reliable. . . . . Each, **$5.00**

Bicycle Bells

No. **34C.** 2¾ inch. Each, **$1.00**
No. **35C.** 2¼ inch. Each, **75c.**
No. **433.** Push Button. Each, **50c.**
No. **332.** Electric Stroke. Each, **50c.**
No. **2F.** Electric Flag. Each, **35c.**
No. **2.** Electric. " **25c.**



No. **4.** The Perfection Spring used on this model is equal to a cushion frame. Ea., **$2.00**

Columbia Automatic Lamp

Columbia Automatic Lamp. Each, $3.00

Veeder Cyclometer

Absolutely positive mechanism Dust proof and waterproof. Registers 10,000 miles and repeats. All the parts are accurately made.
"Trip." . . . . Each, **$2.00**
Single. . . . . " **1.00**

ACCEPT NO SUBSTITUTE **THE SPALDING TRADE-MARK** GUARANTEES QUALITY

Mike Murphy "Rub-In" Athletic Liniment

THIS PREPARATION is the same as has been used by Mike Murphy, the famous athletic trainer, in conditioning the Yale, University of Pennsylvania and other college teams which have been under his charge. He is famous for the perfect condition in which he brings his athletes into a contest, and the ingredients and proper preparation of his "Rub-In" Liniment has been a closely guarded secret. He has finally turned the formula over to A. G. Spalding & Bros. with perfect confidence that the proper materials will always be used in preparing the liniment and that no considerations will induce us to cheapen it in any way.

Large bottles. . . . . Each, **50c.**
Small bottles. . . . . Each, **25c.**

Spalding Elastic Bandages

Spalding Shoulder Bandage

Give circumference around arm and chest. Mention for which shoulder required.

No. **101.** Cotton thread. Each, **$3.50**

No. **101A.** Silk thread. Each, **$5.00**

Spalding Knee Cap Bandage

Give circumference below knee, at knee and just above knee, and state if light or strong pressure is desired.

No. **104.** Cotton thread. Each, **$1.00**

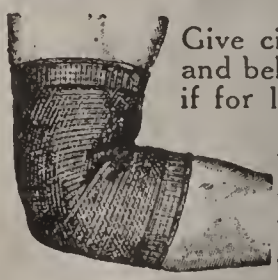
No. **104A.** Silk thread. Each, **$2.00**

Wrist Bandage

Give circumference around smallest part of wrist, and state if for light or strong pressure.

No. **106.** Cotton thread. . . . Each, **50c.**
No. **106A.** Silk thread. . . . . " **75c.**

Elbow Bandage



Give circumference above and below elbow and state if for light or strong pressure.

No. **102.** Cotton thread. Each, **$1.00**

No. **102A.** Silk thread. Each, **$2.00**

Spalding Ankle Bandage

Give circumference around ankle and over instep; state if light or strong pressure is desired.

No. **105.** Cotton thread. Each, **$1.00**

No. **105A.** Silk thread. Each, **$2.00**

Spalding Elastic Bandage

Composed of threads of rubber completely covered. The pressure can be applied wherever necessary. To fasten insert end under last fold.

No. **30.** Width 3 in., 5 yds. long (stretched). Each, **60c.**
No. **25.** Width 2½ in., 5 yds. long (stretched). " **50c.**

Spalding Elastic Belt

Our elastic football belt stretches with the length of the body and may be attached to jacket and pants, thus forming one continuous suit. By closely fitting the body, the opposing player has less chance of tackling. Allows perfect freedom in all positions.

No. **1.** Width 6 inches. Each, **$1.50**

PROMPT ATTENTION GIVEN TO ANY COMMUNICATIONS ADDRESSED TO US

A. G. SPALDING & BROS.
STORES IN ALL LARGE CITIES

FOR COMPLETE LIST OF STORES SEE INSIDE FRONT COVER OF THIS BOOK

Prices in effect January 5, 1913. Subject to change without notice. For Canadian prices see special Canadian Catalogue.

Spalding Jacket Sweaters

The lighter weight button front sweaters listed on this page are especially suitable for wear under regular coat when walking or taking ordinary exercise.

Sizes: 28 to 44 inches chest measurement. We allow four inches for stretch in all our sweaters, and sizes are marked accordingly. It is suggested, however, that for very heavy men a size about two inches larger than coat measurement be ordered to insure a comfortable fit.

Showing No. DJ and No. 3J

No. **DJ.** Fine worsted, standard weight, pearl buttons, fine knit edging. Carried in stock in Gray or White only. See list below of colors supplied on special orders. . Each, **$5.00**
★ *$54.00 Dz.*

No. DJ

Shaker Sweater

No. **3J.** Standard weight, similar style to No. DJ, but Shaker knit instead of fine worsted, and without fine knit edging. Pearl buttons. Carried in stock and supplied only in Plain Gray. . . Each, **$4.00** ★ *$45.00 Dz.*

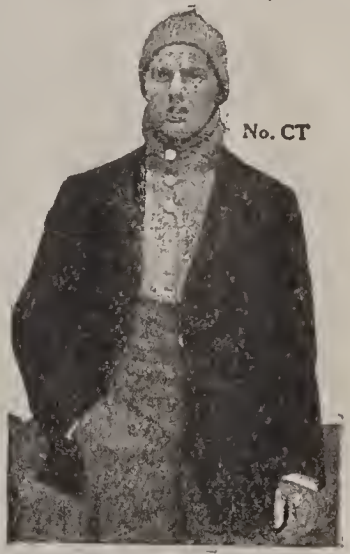
Two pockets in either of above sweaters, put in at time made, not after. . . . . Extra, **50c.**

SPECIAL ORDERS—In addition to stock colors mentioned, we also supply No. DJ sweaters and any of the mufflers and collarettes listed on this page without extra charge, on special orders only, not carried in stock, in any of the following colors: **Black Maroon Scarlet Cardinal Navy Columbia Blue Dark Green Seal Brown**

N. B.—We designate three shades which are sometimes called RED. They are Scarlet, Cardinal, Maroon. Where RED is specified on order, we supply Cardinal.

PLAIN COLORS, other than the above, to order only, 50c. each garment extra.

SPECIAL NOTICE—Solid Color sweaters No. DJ with one color body and another color (not striped) collar and cuffs furnished in any of the colors noted, on special order, at no extra charge. This does not apply to the No. 3J Sweater.

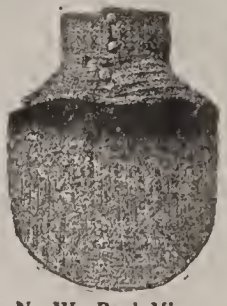


No. CT

Spalding Collarette

No. **CT.** Good weight, highest quality worsted. Stock colors: White or Gray. . . Each, **$2.00**

No. W. Front View



No. W. Back View

Spalding Combined Knitted Muffler and Chest Protector

No. **W.** Fancy knit; good weight, special quality worsted. Stock colors: White or Gray. . . Each, **$1.50**

No. **M.** Special weight; highest quality worsted. Stock colors: White or Gray. . . . . Each, **$1.00**

The prices printed in italics opposite items marked with ★ will be quoted only on orders for one-half dozen or more at one time. Quantity prices NOT allowed on items NOT marked with ★ **Prices Subject to Change Without Notice.**

Spalding Worsted Jerseys

Following sizes carried in stock regularly in all qualities: 28 to 44 inch chest. Other sizes at an advanced price.

We allow two inches for stretch in all our Jerseys, and sizes are marked accordingly. It is suggested, however, that for very heavy men a size about two inches larger than coat measurement be ordered to insure a comfortable fit.

No. 1P

STOCK COLORS

PLAIN COLORS—We carry in stock in all Spalding Stores our line of worsted jerseys (NOT Nos. 12XB, 6, or 6X) in following colors:

NAVY BLUE	GRAY
BLACK	MAROON

SPECIAL ORDERS

We also furnish, without extra charge, on special orders for one-half dozen or more, not carried in stock and NOT supplied in Nos. 12XB, 6, or 6X, the following colors. On orders for less than one-half dozen 10 per cent. will be added to regular price.

WHITE	DARK GREEN
CARDINAL	IRISH GREEN
ORANGE	PURPLE
SCARLET	YELLOW
ROYAL BLUE	SEAL BROWN
COLUMBIA BLUE	OLD GOLD

Other colors than as noted above to order only in any quality (EXCEPT Nos. 14P, 12XB, 6, and 6X), 50c. each extra.

N. B.—We designate three shades which are sometimes called RED. They are Scarlet, Cardinal, and Maroon. Where RED is specified on order, Cardinal will be supplied.

No. 1PF

SPALDING INTERCOLLEGIATE JERSEY

Jerseys are being used more and more by Base Ball Players, especially for early Spring and late Fall games. On account of the special Spalding knit they are very durable, and at the same time they offer no restraint on the free movement of the player

This jersey we consider in a class by itself. No other manufacturer makes a garment of anywhere near the same grade. We recommend it to those who really want the best.

No. 1P. Regular roll collar. Full regular made; that is, fashioned or knit to exact shape on the machine and then put together by hand, altogether different from cutting them out of a piece of material and sewing them up on a machine, as are the majority of garments known as Jerseys. Special quality worsted. Solid colors as specified above. Each, $4.00 ★ *$42.00 Doz.*

No. 1PF. Straight low collar. Quality of worsted and manufacture same as No. 1P. Solid colors as specified above. . . . . Each, $4.00 ★ *$42.00 Doz.*

No. 10P. Regular roll collar. Special quality worsted, fashioned. Solid colors as specified above. . . Each, $3.00 ★ *$30.00 Doz.*

No. 10PF. Straight low collar. Quality of worsted and manufacture same as No. 10P. Solid colors as specified above. Each, $3.00 ★ *$30.00 Doz.*

No. 12P. Regular roll collar. Good quality worsted. Solid colors as specified above. Each, $2.50 ★ *$27.00 Doz.*

No. 14P. Regular roll collar. Worsted. Solid colors: Navy Blue, Black, Gray, and Maroon only. . . . Each, $2.00 ★ *$21.00 Doz.*

No. 12XB. Boys' Jersey. Regular roll collar. Worsted. Furnished in sizes 26 to 34 inches chest measurement only. Solid colors: Navy Blue, Black, Gray, and Maroon only. No special orders. Each, $2.00 ★ *$21.00 Doz.*

Jerseys with Necklace—Nos. 1P, 1PF, 10P, 10PF or 12P Jerseys with necklace stripe of any color specified above, at an extra charge of $1.00 per garment.

Woven Letters, Numerals or Designs

We weave into our best grade Jerseys, No. 1P, Letters, Numerals and Designs in special colors as desired. Prices quoted on application. Designs submitted.

Prices Subject to Advance Without Notice.

The prices printed in italics opposite items marked with ★ will be quoted only on orders for one-half dozen or more. Quantity prices NOT allowed on items NOT marked with ★

ACCEPT NO SUBSTITUTE **THE SPALDING TRADE-MARK** GUARANTEES QUALITY

Spalding Jacket and Vest Collar Sweaters

Sizes: 28 to 44 inches chest measurement.

We allow four inches for stretch in all our sweaters, and sizes are marked accordingly. It is suggested, however, that for very heavy men a size about two inches larger than coat measurement be ordered to insure a comfortable fit.

Spalding Jacket Sweaters

WITH POCKETS

No. **VGP.** Best quality worsted, heavy weight, pearl buttons. Carried in stock in Gray or White only. See list below of colors supplied on special orders. With pocket on either side, and a particularly convenient and popular style for golf players. . . Each, **$6.50** ★ *$69.00 Doz.*

WITHOUT POCKETS

No. **VG.** Same as No. VGP, but without pockets.
Each, **$6.00** ★ *$63.00 Doz.*

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

No. VGP

SPECIAL ORDERS

In addition to stock colors mentioned, we also supply any of the sweaters listed on this page, without extra charge, on special orders only, not carried in stock, in any of the following colors:

BLACK	MAROON	NAVY BLUE	DARK GREEN
CARDINAL	SCARLET	COLUMBIA BLUE	SEAL BROWN

Other colors to order only, in any quality, 50c. each garment extra.

No. VGP Sweater

Spalding Vest Collar Sweaters

No. **BG.** Best quality worsted, good weight, extreme open or low neck. No buttons. Carried in stock in Gray or White only. See list above of colors supplied on special orders.

Each, **$5.50**
★ *$60.00 Doz.*

Two pockets in No. BG Sweater, put in at time sweater is made, not after.
Extra, **50c.**

No. BG

SPECIAL NOTICE. We will furnish any of the solid color sweaters listed on this page with one color body and another color (not striped) collar and cuffs in any of the above colors on special order, at no extra charge.

The prices printed in italics opposite items marked with ★ will be quoted only on orders for one-half dozen or more.
Quantity prices NOT allowed on items NOT marked with ★

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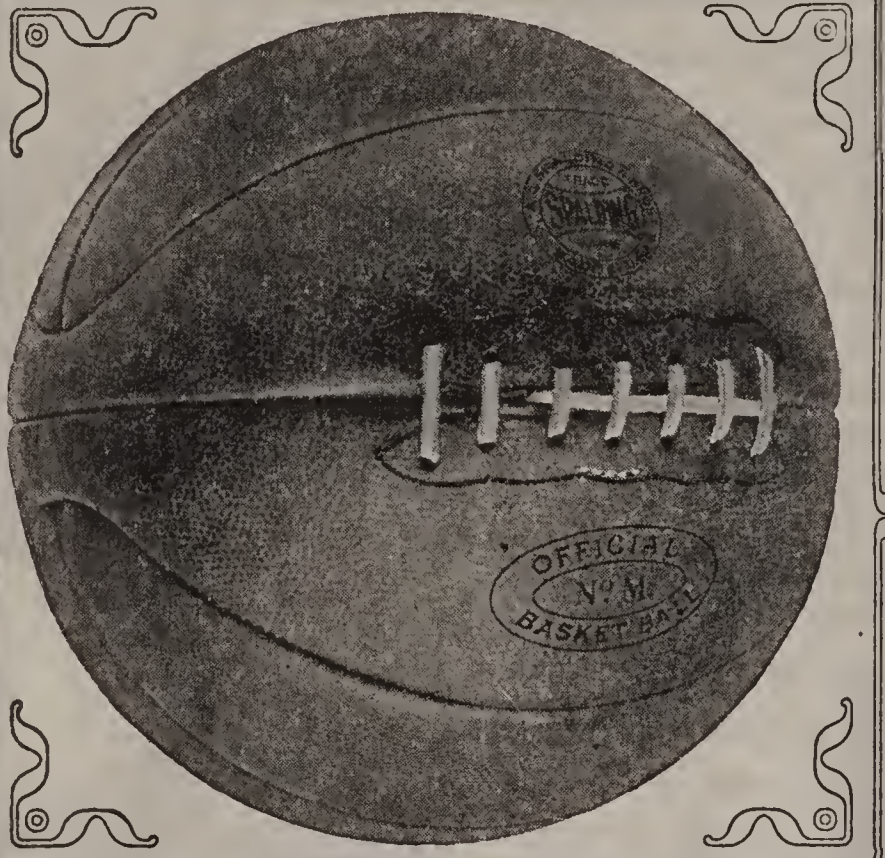
STORES IN ALL LARGE CITIES

FOR COMPLETE LIST OF STORES SEE INSIDE FRONT COVER OF THIS BOOK

Prices in effect January 5, 1913. Subject to change without notice. For Canadian prices see special Canadian Catalogue.

ACCEPT NO SUBSTITUTE **THE SPALDING TRADE-MARK** GUARANTEES QUALITY

The Spalding Official Basket Ball



THE ONLY OFFICIAL BASKET BALL

WE GUARANTEE *this ball to be perfect in material and workmanship and correct in shape and size when inspected at our factory. If any defect is discovered during the first game in which it is used, or during the first day's practice use, and, if returned at once, we will replace same under this guarantee. We do not guarantee against ordinary wear nor against defect in shape or size that is not discovered immediately after the first day's use.*

Owing to the superb quality of our **No. M Basket Ball,** *our customers have grown to expect a season's use of one ball, and at times make unreasonable claims under our guarantee, which we will not allow.*

A. G. SPALDING & BROS.

OFFICIALLY ADOPTED AND STANDARD. The cover is made in four sections, with capless ends, and of the finest and most carefully selected pebble grain English leather. We take the entire output of this superior grade of leather from the English tanners, and in the Official Basket Ball use the choicest parts of each hide. Extra heavy bladder made especially for this ball of extra quality pure Para rubber (not compounded). Each ball packed complete, in sealed box, with rawhide lace and lacing needle, and guaranteed perfect in every detail. To provide that all official contests may be held under absolutely fair and uniform conditions, it is stipulated that this ball must be used in all match games of either men's or women's teams.

No. M. Spalding "Official" Basket Ball. Each, $6.00

Extract from Men's Official Rule Book

RULE II—BALL.

SEC. 3. The ball made by A. G. Spalding & Bros. shall be the official ball. Official balls will be stamped as herewith, and will be in sealed boxes.

OFFICIAL No M BASKET BALL

SEC. 4. The official ball must be used in all match games.

Extract from Official Collegiate Rule Book

The Spalding Official Basket Ball No. M is the official ball of the Intercollegiate Basket Ball Association, and must be used in all match games.

OFFICIAL No M BASKET BALL

Extract from Women's Official Rule Book

RULE II—BALL.

SEC. 3. The ball made by A. G. Spalding & Bros. shall be the official ball. Official balls will be stamped as herewith, and will be in sealed boxes.

OFFICIAL No M BASKET BALL

SEC. 4. The official ball must be used in all match games.

PROMPT ATTENTION GIVEN TO ANY COMMUNICATIONS ADDRESSED TO US

A. G. SPALDING & BROS.
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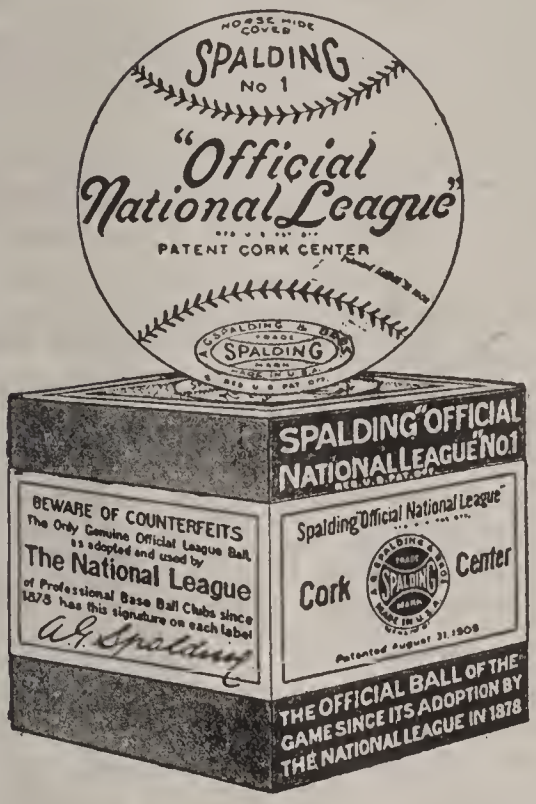
REG. U. S. PAT. OFF.

Spalding "Official National League" Ball

Patent Cork Center

Patented August 31, 1909



Adopted by the National League in 1878, is the only ball used in Championship games since that time and has now been adopted for twenty years more, making a total adoption of fifty-four years.

This ball has the **Spalding "Patent" Cork Center,** the same as used since August 1, 1910, without change in size of cork or construction

Each ball wrapped in tinfoil, packed in a separate box, and sealed in accordance with the latest League regulations. Warranted to last a full game when used under ordinary conditions.

No. 1 { Each, - - $1.25
Per Dozen, $15.00

The Spalding "Official National League" Ball has been the Official Ball of the Game since 1878

Spalding Complete Catalogue of Athletic Goods Mailed Free.

PROMPT ATTENTION GIVEN TO ANY COMMUNICATIONS ADDRESSED TO US

A. G. SPALDING & BROS.
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Standard Policy

A Standard Quality must be inseparably linked to a Standard Policy.

Without a definite and Standard Mercantile Policy, it is impossible for a Manufacturer to long maintain a Standard Quality.

To market his goods through the jobber, a manufacturer must provide a profit for the jobber as well as for the retail dealer. To meet these conditions of Dual Profits, the manufacturer is obliged to set a proportionately high list price on his goods to the consumer.

To enable the glib salesman, when booking his orders, to figure out attractive profits to both the jobber and retailer, these high list prices are absolutely essential; but their real purpose will have been served when the manufacturer has secured his order from the jobber, and the jobber has secured his order from the retailer.

However, these deceptive high list prices are not fair to the consumer, who does not, and, in reality, is not ever expected to pay these fancy list prices.

When the season opens for the sale of such goods, with their misleading but alluring high list prices, the retailer begins to realize his responsibilities, and grapples with the situation as best he can, by offering "special discounts," which vary with local trade conditions.

Under this system of merchandising, the profits to both the manufacturer and the jobber are assured; but as there is no stability maintained in the prices to the consumer, the keen competition amongst the local dealers invariably leads to a demoralized cutting of prices by which the profits of the retailer are practically eliminated.

This demoralization always reacts on the manufacturer. The jobber insists on lower, and still lower, prices. The manufacturer, in his turn, meets this demand for the lowering of prices by the only way open to him, viz.: the cheapening and degrading of the quality of his product.

The foregoing conditions became so intolerable that 14 years ago, in 1899, A. G. Spalding & Bros. determined to rectify this demoralization in the Athletic Goods Trade, and inaugurated what has since become known as "The Spalding Policy."

The "Spalding Policy" eliminates the jobber entirely, so far as Spalding Goods are concerned, and the retail dealer secures the supply of Spalding Athletic Goods direct from the manufacturer by which the retail dealer is assured a fair, legitimate and certain profit on all Spalding Athletic Goods, and the consumer is assured a Standard Quality and is protected from imposition.

The "Spalding Policy" is decidedly for the interest and protection of the users of Athletic Goods, and acts in two ways:

First.—The user is assured of genuine Official Standard Athletic Goods and the same prices to everybody.

Second.—As manufacturers, we can proceed with confidence in purchasing at the proper time, the very best raw materials required in the manufacture of our various goods, well ahead of their respective seasons, and this enables us to provide the necessary quantity and absolutely maintain the Spalding Standard of Quality.

All retail dealers handling Spalding Athletic Goods are requested to supply consumers at our regular printed catalogue prices—neither more nor less—the same prices that similar goods are sold for in our New York, Chicago and other stores.

All Spalding dealers, as well as users of Spalding Athletic Goods, are treated exactly alike, and no special rebates or discriminations are allowed to anyone.

This briefly, is the "Spalding Policy," which has already been in successful operation for the past 14 years, and will be indefinitely continued.

In other words, "The Spalding Policy" is a "square deal" for everybody.

A. G. SPALDING & BROS.

By A. G. Spalding.

PRESIDENT.

Standard Quality

An article that is universally given the appellation **"Standard"** is thereby conceded to be the criterion, to which are compared all other things of a similar nature. For instance, the Gold Dollar of the United States is the Standard unit of currency, because it must legally contain a specific proportion of pure gold, and the fact of its being Genuine is guaranteed by the Government Stamp thereon. As a protection to the users of this currency against counterfeiting and other tricks, considerable money is expended in maintaining a Secret Service Bureau of Experts. Under the law, citizen manufacturers must depend to a great extent upon Trade-Marks and similar devices to protect themselves against counterfeit products—without the aid of "Government Detectives" or "Public Opinion" to assist them.

Consequently the "Consumer's Protection" against misrepresentation and "inferior quality" rests entirely upon the integrity and responsibility of the "Manufacturer."

A. G. Spalding & Bros. have, by their rigorous attention to "Quality," for thirty-seven years, caused their Trade-Mark to become known throughout the world as a Guarantee of Quality as dependable in their field as the U. S. Currency is in its field.

The necessity of upholding the Guarantee of the Spalding Trade-Mark and maintaining the Standard Quality of their Athletic Goods, is, therefore, as obvious as is the necessity of the Government in maintaining a Standard Currency.

Thus each consumer is not only insuring himself but also protecting other consumers when he assists a Reliable Manufacturer in upholding his Trade-Mark and all that it stands for. Therefore, we urge all users of our Athletic Goods to assist us in maintaining the Spalding Standard of Excellence, by insisting that our Trade-Mark be plainly stamped on all athletic goods which they buy, because without this precaution our best efforts towards maintaining Standard Quality and preventing fraudulent substitution will be ineffectual.

Manufacturers of Standard Articles invariably suffer the reputation of being high-priced, and this sentiment is fostered and emphasized by makers of "inferior goods," with whom low prices are the main consideration.

A manufacturer of recognized Standard Goods, with a reputation to uphold and a guarantee to protect must necessarily have higher prices than a manufacturer of cheap goods, whose idea of and basis of a claim for Standard Quality depends principally upon the eloquence of the salesman.

We know from experience that there is no quicksand more unstable than poverty in quality—and we avoid this quicksand by Standard Quality.

A. G. Spalding & Bros

SPALDING'S

ATHLETIC LIBRARY

A separate book covers every Athletic Sport and is Official and Standard

Price 10 cents each

GRAND PRIZE

ST. LOUIS, 1904

A. G. SPALDING & BROS. TRADE SPALDING MARK MADE IN U.S.A. REG. U.S. PAT. OFF.

GRAND PRIX

PARIS, 1900

SPALDING ATHLETIC GOODS

ARE THE STANDARD OF THE WORLD

A. G. SPALDING & BROS.

MAINTAIN WHOLESALE *and* RETAIL STORES *in the* FOLLOWING CITIES:

NEW YORK
BOSTON
PHILADELPHIA
NEWARK
BUFFALO
SYRACUSE
ROCHESTER
BALTIMORE
WASHINGTON
CHICAGO
MILWAUKEE
DETROIT
CINCINNATI
CLEVELAND
COLUMBUS
INDIANAPOLIS
PITTSBURGH
ATLANTA
LOUISVILLE
ST. LOUIS
KANSAS CITY
SAN FRANCISCO
LOS ANGELES
SEATTLE
MINNEAPOLIS
ST. PAUL
DENVER
DALLAS
NEW ORLEANS
LONDON, ENGLAND
BIRMINGHAM, ENGLAND
MANCHESTER, ENGLAND
EDINBURGH, SCOTLAND
GLASGOW, SCOTLAND
SYDNEY, AUSTRALIA
MONTREAL, CANADA
TORONTO, CANADA
PARIS, FRANCE

Factories owned and operated by A. G. Spalding & Bros. and where all of Spalding's Trade-Marked Athletic Goods are made are located in the following cities:

NEW YORK	**CHICAGO**	**SAN FRANCISCO**	**CHICOPEE, MASS.**
BROOKLYN	**BOSTON**	**PHILADELPHIA**	**LONDON, ENG.**